

Hydraulic Fracturing Fluid Product Disclosure - FORCAP 4-13-15 H-2 CHESAPEAKE

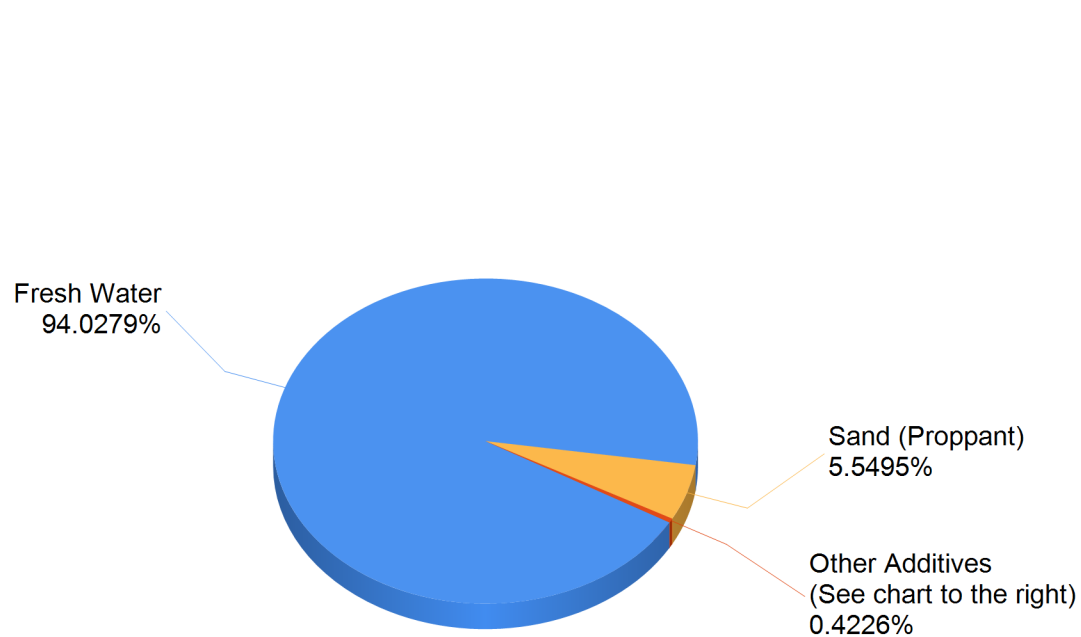


API #	1703125585	County	DE SOTO	Fracture Date	5/16/2011
Surface Casing Depth (ft)		State	LOUISIANA	Proppant Mass Pumped (lbs)	4,853,280
True Vertical Depth of Well (ft)	11,702.7	Longitude	-93.90682	Water Volume Pumped (gals)	3,719,982
Play	HAYNESVILLE SHALE	Latitude	32.13792	Frac Fluid Volume Total (gals)	3,956,254
Well Type	HORIZONTAL	Lat/Long Projection	NAD 27	Total Fluid Mass Pumped (lbs)	36,067,559

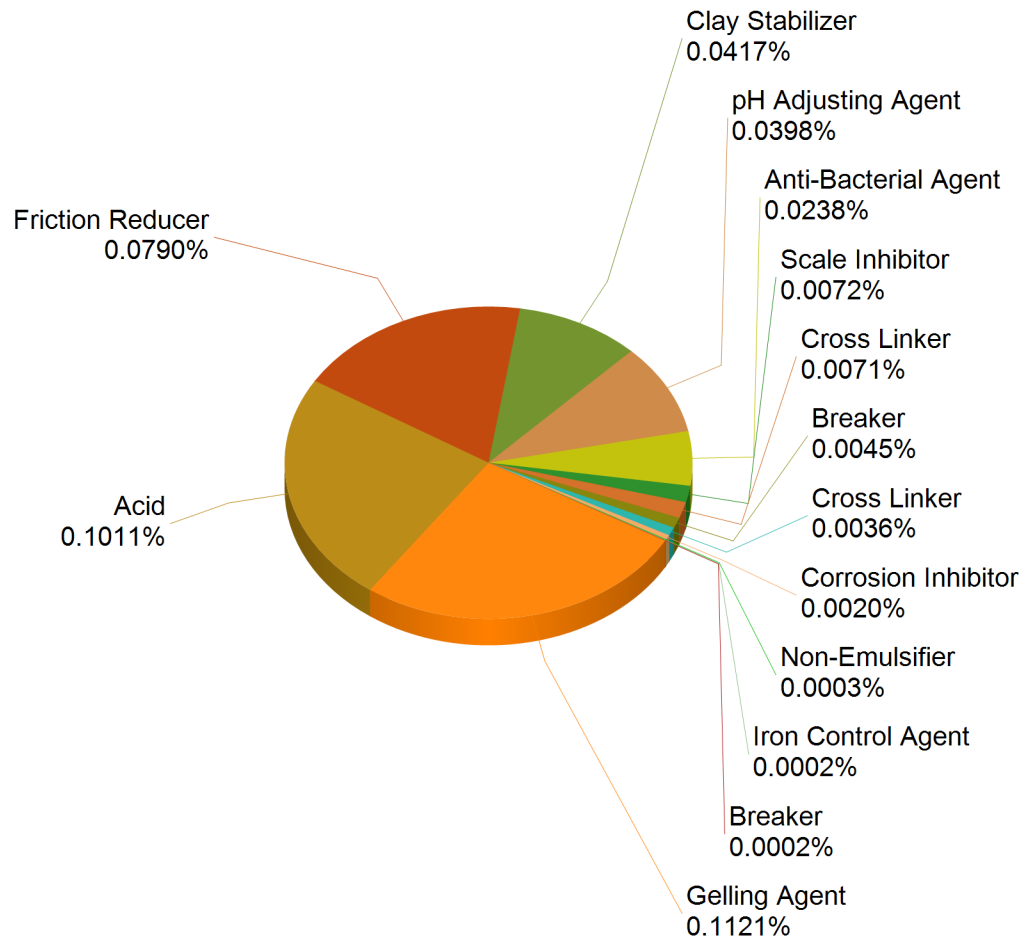
Product Type	Purpose	Downhole Result	Other Common Uses	Product Name	Total Volume Used in Well	Overall % by Total Volume
Water	Expand fracture and deliver sand	Some stays in formation while remainder returns with natural formation water as "produced water" (actual amounts returned vary from well to well)	Landscaping, manufacturing	Fresh Water	3,719,982	94.0279 %
Sand (Proppant)	Allows the fractures to remain open so the gas can escape	Stays in formation, embedded in fractures (used to "prop" fractures open)	Drinking water filtration, play sand, concrete and brick mortar	Sand (Proppant)	219,552	5.5495 %
Acid Package Hydrochloric Acid Corrosion Inhibitor Iron Control	Helps dissolve minerals and initiate cracks in the rock	Reacts with minerals present in the formation to create salts, water, and carbon dioxide.	Swimming pool chemical and cleaner	10.1 - 15 HCL	4,000	0.1011 %
	Prevents the corrosion of the pipe	Bonds to metal surfaces (pipe) downhole. Any remaining product not bonded is broken down by micro-organisms and consumed or returned in produced water.	Used in pharmaceuticals, acrylic fibers and plastics	CI-350HT	80	0.0020 %
	Prevents precipitation of metal oxides	Reacts with minerals in the formation to create simple salts, carbon dioxide and water all of which are returned in produced water.	Food additive; food and beverages; lemon juice ~7% citric acid	FE 200	8	0.0002 %
Gelling Agent	Thickens the water in order to suspend the sand	Combines with the "breaker" in the formation thus making it much easier for the fluid to flow to the borehole and return in produced water.	Cosmetics, baked goods, ice cream, toothpaste, sauces, and salad dressings	HVG01 (TURQUOISE-1 BULK)	4,435	0.1121 %
Friction Reducer	"Slicks" the water to minimize friction	Remains in the formation where temperature and exposure to the "breaker" allows it to be broken down and consumed by naturally occurring micro-organisms. A small amount returns with produced water.	Used in cosmetics including hair, make-up, nail and skin products	FRW-200	3,125	0.0790 %
Clay Stabilizer	Creates a brine carrier fluid	Reacts with clays in the formation through a sodium - potassium ion exchange. Reaction results in sodium chloride (table salt) which is returned in produced water.	Used in low-sodium table salt substitute, medicines, and IV fluids	KCLS-4	1,648	0.0417 %
pH Adjusting Agent	Maintains the effectiveness of other components, such as crosslinkers	Reacts with acidic agents in the treatment fluid to maintain a neutral (non-acidic, non-alkaline) pH. Reaction results in mineral salts, water and carbon dioxide which is returned in produced water.	Used in laundry detergents, soap, water softener and dish washer detergents	B10 (HIGH PH BUFFER)	1,575	0.0398 %
Anti-Bacterial Agent	Eliminates bacteria in the water that produces corrosive by-products	Reacts with micro-organisms that may be present in the treatment fluid and formation. These micro-organisms break down the product with a small amount of the product returning in produced water.	Disinfectant; sterilizer for medical and dental equipment	Bactron K-139	940	0.0238 %

Scale Inhibitor	Prevents scale deposits in the pipe	Product attaches to the formation downhole. The majority of product returns with produced water while remaining reacts with micro-organisms that break down and consume the product.	Used in household cleansers, de-icer, paints, and caulk	Gyptron T-390	285	0.0072 %
Cross Linker	Maintains fluid viscosity as temperature increases	Combines with the "breaker" in the formation to create salts that are returned in produced water.	Used in laundry detergents, hand soaps and cosmetics	BXL03 Borate XL Delayed High Temp	282	0.0071 %
				BXL02 Borate XL	143	0.0036 %
Breaker	Allows a delayed break down the gel	Reacts with the "crosslinker" and "gel" once in the formation making it easier for the fluid to flow to the borehole. Reaction produces ammonia and sulfate salts which are returned in produced water.	Used in hair coloring, as a disinfectant, and in the manufacture of common household plastics	HT Liquid Breaker - 3%	180	0.0045 %
				APB01 (AMMONIUM PERSUFATE BREAKER)	7	0.0002 %
Non-Emulsifier	Used to break or separate oil / water mixtures (emulsions)	Generally returned with produced water, but in some formations may enter the gas stream and return in the produced natural gas.	Used in food and beverage processing, pharmaceuticals, and water treatment	NE 100	12	0.0003 %

Hydraulic Fracturing Fluid Breakdown by Volume



Details for the Other Additives worth 0.4226% of Total Volume



Hydraulic Fracturing Fluid Product Component Information Disclosure - FORCAP 4-13-15 H-2 CHESAPEAKE



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Supplier	Product Type	Product Name	Total Product Pumped (gals)	Total Product Mass (lbs)	Component Listed on MSDS	Chemical Abstract Service Number (CAS #)	MAXIMUM Component Concentration of Product (% by Mass)	MAXIMUM Component Mass Pumped (lbs)	MAXIMUM Component Concentration Pumped (% by Mass)	MAXIMUM Parts per Million (PPM) by Mass
FRAC TECH SERVICES	Gelling Agent	HVG01 (TURQUOISE-1 BULK)	4,435	38,884	Petroleum Distillate Hydrotreated Light	064742-47-8	100.00%	38,884	0.10781%	1,078
	Acid	10.1 - 15 HCL	4,000	36,072	Water	007732-18-5	85.00%	30,661	0.08501%	850
					Hydrochloric Acid	007647-01-0	15.00%	5,411	0.01500%	150
	pH Adjusting Agent	B10 (HIGH PH BUFFER)	1,575	18,938	Potassium Hydroxide	001310-58-3	20.00%	3,788	0.01050%	105
	Cross Linker	BXL02 Borate XL	143	1,397	Potassium Hydroxide	001310-58-3	10.00%	140	0.00039%	4
		BXL03 Borate XL Delayed High Temp	282	3,414	No Hazardous Components	NONE			0.00000%	0
	Breaker	APB01 (AMMONIUM PERSUFATE BREAKER)	7	110	Ammonium Persulfate	007727-54-0	100.00%	110	0.00030%	3
		HT Liquid Breaker - 3%	180	1,503	Tertiary Butyl Hydroperoxide	000075-91-2	10.00%	150	0.00042%	4
	Corrosion Inhibitor	CI-350HT	80	661	Formic Acid	000064-18-6	5.00%	33	0.00009%	1
					Isopropanol (Isopropyl Alcohol, Propan-2-ol)	000067-63-0	5.00%	33	0.00009%	1
					Methanol (Methyl Alcohol)	000067-56-1	5.00%	33	0.00009%	1
	Iron Control Agent	FE 200	8	73	No Hazardous Components	NONE			0.00000%	0
	Non-Emulsifier	NE 100	12	97	No Hazardous Components	NONE			0.00000%	0
	Friction Reducer	FRW-200	3,125	25,833	No Hazardous Components	NONE			0.00000%	0
	Clay Stabilizer	KCLS-4	1,648	14,862	No Hazardous Components	NONE			0.00000%	0

CHAMPION TECHNOLOGIES INC	Anti-Bacterial Agent	Bactron K-139	940	8,006	Quaternary Ammonium Compound	068424-85-1	10.00%	801	0.00222%	22
					Ethanol	000064-17-5	5.00%	400	0.00111%	11
					Glutaraldehyde (Pentanediol)	000111-30-8	5.00%	400	0.00111%	11
	Scale Inhibitor	Gyptron T-390	285	2,579	Methanol (Methyl Alcohol)	000067-56-1	10.00%	258	0.00071%	7

All component information listed was obtained from supplier Material Safety Data Sheets (MSDS). The Occupational Safety and Health Administration (OSHA) sets the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200 (i). As a result, the Operator does not have the legal authority to disclose any supplier "proprietary", "trade secret", or "confidential business information".